ESMValTool v2 on Mistral

Most of this document is bases on the instructions in the official documentation.

Prepared for the MPI-M LunchBytes seminar on Nov 18 by Sebastian Milinski sebastian.milinski@mpimet.mpg.de.

Installing ESMValTool on Mistral

The easiest way to install ESMValTool on Mistral is using Anaconda. It makes sense to move the environments to a different location than the home directory because each environment may use 4-5GB.

First, load the anaconda module:

```
module load anaconda3/bleeding_edge
```

If there is a problem loading the anaconda module, try:

```
module unload netcdf_c
```

To change the default environment directory, edit the `~/.condarc` file:

```
envs_dirs:
  - /work/your_project/m123456/conda-envs
```

To create a new environment and install ESMValTool in it, run:

```
conda create --name esmvaltool_fixed -c esmvalgroup -c conda-forge julia
esmvalcore==2.0.0b1 esmvaltool==2.0.0b1
```

On Nov 18 2019, the official installation instructions result in an installation that is incompatible with many examples. This configuration uses a slightly older ESMValTool version and explicitly installs julia.

Anaconda will print a list of packages that will be installed. Confirm with enter and get a coffee... (this can take a while).

Some useful commands for working with Anaconda can be found in the conda cheat sheet.

Configure ESMValTool

A config file with some adjustments for Mistral can be copied from here:

```
/home/mpim/m300265/scripts/lunchbytes/esmvaltool/config-user-lunchbytes.yml
```

Run ESMValTool

A very simple example can be copied from here:

```
/home/mpim/m300265/scripts/lunchbytes/esmvaltool/examples/recipe_python.yml
```

In the `config-user-lunchbytes.yml`, all output will go into the directory `./esmvaltool_output` in your current working directory. You might want to change your directory before the next command.

Before running ESMValTool, make sure that the Conda environment that you created before is activated:

```
source activate esmvaltool
```

×Depending on your shell configuration, you can use *conda activate* instead of *source activate*:

```
Conda activate esmvaltool
```

Finally, to run this example, type:

```
esmvaltool -c config-user-lunchbytes.yml recipe_python.yml
```

When you are done with the ESMValTool runs and want to deactivate the Conda environment to return to your normal software tree or a different Conda environment, type:

```
source deactivate
```

×Depending on your shell configuration, you can use *conda deactivate* instead of *source deactivate*:

```
Conda deactivate
```

Understanding the output

Modifying the preprocessor and diagnostics

Additional ressources

- CMIP6 data availability: https://pcmdi.llnl.gov/CMIP6/ArchiveStatistics/esgf_data_holdings/
- recipes in the ESMValTool documentation
- More recipes on github